

Please type a plus sign (+) inside this box [ + ]

PTO/SB/05 (12/97)

Approved for use through 09/30/00. OMB 0651-0032

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**UTILITY PATENT APPLICATION TRANSMITTAL**  
(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No. 080398.P334

Total Pages 3

First Named Inventor or Application Identifier Klaus Hofrichter

Express Mail Label No. EL 234 217 466 US

**ADDRESS TO:** Assistant Commissioner for Patents  
Box Patent Application  
Washington, D. C. 20231

**APPLICATION ELEMENTS**

See MPEP chapter 600 concerning utility patent application contents.

1.  X  Fee Transmittal Form  
(Submit an original, and a duplicate for fee processing)
2.  X  Specification (Total Pages 33)  
(preferred arrangement set forth below)
  - Descriptive Title of the Invention
  - Cross References to Related Applications
  - Statement Regarding Fed sponsored R & D
  - Reference to Microfiche Appendix
  - Background of the Invention
  - Brief Summary of the Invention
  - Brief Description of the Drawings (if filed)
  - Detailed Description
  - Claims
  - Abstract of the Disclosure
3.  X  Drawings(s) (35 USC 113) (Total Sheets 7)
4.  X  Oath or Declaration (Total Pages 5) (Unexecuted)
  - a.   Newly Executed (Original or Copy)
  - b.   Copy from a Prior Application (37 CFR 1.63(d))  
(for Continuation/Divisional with Box 17 completed) (**Note Box 5 below**)
  - i.   DELETIONS OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
5.   Incorporation By Reference (useable if Box 4b is checked)  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6.   Microfiche Computer Program (Appendix)

7. \_\_\_\_\_ Nucleotide and/or Amino Acid Sequence Submission  
(if applicable, all necessary)

- a. \_\_\_\_\_ Computer Readable Copy  
b. \_\_\_\_\_ Paper Copy (identical to computer copy)  
c. \_\_\_\_\_ Statement verifying identity of above copies

#### ACCOMPANYING APPLICATION PARTS

8. \_\_\_\_\_ Assignment Papers (cover sheet & documents(s))
9. \_\_\_\_\_ a. 37 CFR 3.73(b) Statement (where there is an assignee)  
\_\_\_\_\_ X b. Power of Attorney (Unexecuted)
10. \_\_\_\_\_ English Translation Document (if applicable)
11. \_\_\_\_\_ a. Information Disclosure Statement (IDS)/PTO-1449  
\_\_\_\_\_ b. Copies of IDS Citations
12. \_\_\_\_\_ Preliminary Amendment
13. X \_\_\_\_\_ Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
14. \_\_\_\_\_ a. Small Entity Statement(s)  
\_\_\_\_\_ b. Statement filed in prior application, Status still proper and desired
15. \_\_\_\_\_ Certified Copy of Priority Document(s) (if foreign priority is claimed)
16. X \_\_\_\_\_ Other: Attorney signature page including Copy of postcard and Certificate of Express  
Mailing pursuant to CFR §1.10.

17. If a **CONTINUING APPLICATION**, check appropriate box and supply the requisite information:

\_\_\_\_\_ Continuation \_\_\_\_\_ Divisional \_\_\_\_\_ Continuation-in-part (CIP)  
of prior application No: \_\_\_\_\_

#### 18. Correspondence Address

\_\_\_\_\_ Customer Number or Bar Code Label \_\_\_\_\_  
(Insert Customer No. or Attach Bar Code Label here)

or

X \_\_\_\_\_ Correspondence Address Below

NAME Jeffrey S. Smith, Reg. No. 39,377  
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

ADDRESS 12400 Wilshire Boulevard  
Seventh Floor

CITY Los Angeles STATE California ZIP CODE 90025-1026

Country U.S.A. TELEPHONE (408) 720-8598 FAX (408) 720-9397

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: August 30, 2000 By Jeffrey S. Smith  
Jeffrey S. Smith  
Reg. No. 39,377

12400 Wilshire Blvd.  
Seventh Floor  
Los Angeles, CA 90025-1026  
(408) 720-8598

"Express Mail" mailing label number: EL 234 217 466 US

Date of Deposit: August 30, 2000

I hereby certify that I am causing this paper or fee to be deposited with the United States Postal Service "Express Mail Post Office to Addressee" service on the date indicated above and that this paper or fee has been addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

Tina Domingo

(Typed or printed name of person mailing paper or fee)

(Signature of person mailing paper or fee)

(Date signed)

Serial/Patent No. \* \* Filing/Issue Date: Herewith  
Client: Sony Electronics, Inc.  
Title: Real-Time Bookmarking of Streaming Media Assets  
BSTZ File No.: 80398.P334 Atty/Secty Initials: MES/JSS/td  
Date Mailed: 8-30-2000 Docket Due Date: \* \*

The following has been received in the U.S. Patent & Trademark Office on the date stamped hereon:

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Amendment/Response (____ pgs.)  | <input checked="" type="checkbox"/> Express Mail No. <u>EL234217466US</u>              | <input checked="" type="checkbox"/> Check No. <u>37368</u> |
| <input type="checkbox"/> Appeal Brief (____ pgs.) (in triplicate)                                    | <input type="checkbox"/> _____ Month(s) Extension of Time                              | Amt. <u>\$798.00</u>                                       |
| <input checked="" type="checkbox"/> Application - Utility ( <u>33</u> pgs., with cover and abstract) | <input type="checkbox"/> Information Disclosure Statement & PTO-1449 (____ pgs.)       | <input type="checkbox"/> Check No. _____                   |
| <input type="checkbox"/> Application - Rule 1.53(b) Continuation (____ pgs.)                         | <input type="checkbox"/> Issue Fee Transmittal   | Amt. _____   |
| <input type="checkbox"/> Application - Rule 1.53(b) Divisional (____ pgs.)                           | <input type="checkbox"/> Notice of Appeal  |  |
| <input type="checkbox"/> Application - Rule 1.53(b) CIP (____ pgs.)                                  | <input type="checkbox"/> Petition for Extension of Time                                |  |
| <input type="checkbox"/> Application - Rule 1.53(d) CPA Transmittal (____ pgs.)                      | <input type="checkbox"/> Petition for _____  |  |
| <input type="checkbox"/> Application - Design (____ pgs.)  | <input checked="" type="checkbox"/> Postcard   |  |
| <input type="checkbox"/> Application - PCT (____ pgs.)   | <input type="checkbox"/> Power of Attorney (____ pgs.)                                 |  |
| <input type="checkbox"/> Application - Provisional (____ pgs.)                                       | <input type="checkbox"/> Preliminary Amendment (____ pgs.)                             |  |
| <input type="checkbox"/> Assignment and Cover Sheet  | <input type="checkbox"/> Reply Brief (____ pgs.)                                       |  |
| <input checked="" type="checkbox"/> Certificate of Mailing (Express Mail)                            | <input type="checkbox"/> Response to Notice of Missing Parts                           |  |
| <input checked="" type="checkbox"/> Declaration & POA ( <u>5</u> pgs.) (Unexecuted)                  | <input type="checkbox"/> Small Entity Declaration for Indep. Inventor/Small Business   |  |
| <input type="checkbox"/> Disclosure Docs & Orig. & Copy of Inventions Signed Letter (____ pgs.)      | <input checked="" type="checkbox"/> Transmittal Letter, in duplicate ( <u>3</u> pages) |  |
| <input checked="" type="checkbox"/> Drawings <u>7</u> # of sheets includes <u>8</u> figures          | <input checked="" type="checkbox"/> Fee Transmittal, in duplicate                      |  |

☐ Other: \_\_\_\_\_

UNITED STATES PATENT APPLICATION

FOR

REAL-TIME BOOKMARKING OF STREAMING MEDIA ASSETS

Inventors:  
Klaus Hofrichter  
Richter A. Rafey

PREPARED BY:

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP  
12400 WILSHIRE BOULEVARD  
SEVENTH FLOOR  
LOS ANGELES, CA 90025-1026  
(408) 720-8300

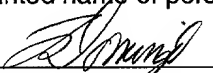
EXPRESS MAIL CERTIFICATE OF MAILING

"Express Mail" mailing label number EL 234 217 466 US

Date of Deposit August 30, 2000

I hereby certify that I am causing this paper or fee to be deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231

Tina Domingo  
(Typed or printed name of person mailing paper or fee)

 8-30-2000  
(Signature of person mailing paper or fee) Date

000000 "EL 234 217 466 US"

## REAL-TIME BOOKMARKING OF STREAMING MEDIA ASSETS

### FIELD OF INVENTION

The invention is related to audio/video storage and multimedia  
5 presentation systems.

### BACKGROUND OF THE INVENTION

A multimedia presentation system enables a viewer to select one or  
more segments to watch by displaying a series of teasers, or short clips, that  
10 describe the segments.

In some systems, the teasers are presented first, followed by the full  
stories. The user can interact with the presentation engine to influence the  
presentation sequence by either jumping to a specific story during the  
presentation of the respective teaser or by skipping a story to continue with  
15 the next story, or another continuation point.

The problem with this system is that this system only allows changing  
the "position-pointer" in an ongoing presentation. There is also no real indexing  
to the stories. The viewer is unable to setup a presentation sequence  
dynamically for passive viewing afterwards.

Parameter	Value	Unit
Initial temperature	298.15	K
Final temperature	300.15	K
Pressure	1.01325	bar
Volume	0.001	m <sup>3</sup>
Mass	0.001	kg
Number of moles	0.001	mol
Specific heat capacity	1.005	J/kg·K
Thermal conductivity	0.026	W/m·K
Dynamic viscosity	1.81e-05	Pa·s
Prandtl number	7.01	-
Grashof number	1.56e+08	-
Nusselt number	1.02e+03	-
Heat transfer coefficient	1020	W/m <sup>2</sup> ·K
Heat flux	1020	W/m <sup>2</sup>
Temperature difference	2	K
Length	0.01	m
Area	0.0001	m <sup>2</sup>
Volume	0.001	m <sup>3</sup>
Mass	0.001	kg
Number of moles	0.001	mol
Specific heat capacity	1.005	J/kg·K
Thermal conductivity	0.026	W/m·K
Dynamic viscosity	1.81e-05	Pa·s
Prandtl number	7.01	-
Grashof number	1.56e+08	-
Nusselt number	1.02e+03	-
Heat transfer coefficient	1020	W/m <sup>2</sup> ·K
Heat flux	1020	W/m <sup>2</sup>
Temperature difference	2	K
Length	0.01	m
Area	0.0001	m <sup>2</sup>
Volume	0.001	m <sup>3</sup>
Mass	0.001	kg
Number of moles	0.001	mol
Specific heat capacity	1.005	J/kg·K
Thermal conductivity	0.026	W/m·K
Dynamic viscosity	1.81e-05	Pa·s
Prandtl number	7.01	-
Grashof number	1.56e+08	-
Nusselt number	1.02e+03	-
Heat transfer coefficient	1020	W/m <sup>2</sup> ·K
Heat flux	1020	W/m <sup>2</sup>
Temperature difference	2	K
Length	0.01	m
Area	0.0001	m <sup>2</sup>
Volume	0.001	m <sup>3</sup>
Mass	0.001	kg
Number of moles	0.001	mol
Specific heat capacity	1.005	J/kg·K
Thermal conductivity	0.026	W/m·K
Dynamic viscosity	1.81e-05	Pa·s
Prandtl number	7.01	-
Grashof number	1.56e+08	-
Nusselt number	1.02e+03	-
Heat transfer coefficient	1020	W/m <sup>2</sup> ·K
Heat flux	1020	W/m <sup>2</sup>
Temperature difference	2	K
Length	0.01	m
Area	0.0001	m <sup>2</sup>
Volume	0.001	m <sup>3</sup>
Mass	0.001	kg
Number of moles	0.001	mol
Specific heat capacity	1.005	J/kg·K
Thermal conductivity	0.026	W/m·K
Dynamic viscosity	1.81e-05	Pa·s
Prandtl number	7.01	-
Grashof number	1.56e+08	-
Nusselt number	1.02e+03	-
Heat transfer coefficient	1020	W/m <sup>2</sup> ·K
Heat flux	1020	W/m <sup>2</sup>
Temperature difference	2	K
Length	0.01	m
Area	0.0001	m <sup>2</sup>
Volume	0.001	m <sup>3</sup>
Mass	0.001	kg
Number of moles	0.001	mol
Specific heat capacity	1.005	J/kg·K
Thermal conductivity	0.026	W/m·K
Dynamic viscosity	1.81e-05	Pa·s
Prandtl number	7.01	-
Grashof number	1.56e+08	-
Nusselt number	1.02e+03	-
Heat transfer coefficient	1020	W/m <sup>2</sup> ·K
Heat flux	1020	W/m <sup>2</sup>
Temperature difference	2	K
Length	0.01	m
Area	0.0001	m <sup>2</sup>
Volume	0.001	m <sup>3</sup>
Mass	0.001	kg
Number of moles	0.001	mol
Specific heat capacity	1.005	J/kg·K
Thermal conductivity	0.026	W/m·K
Dynamic viscosity	1.81e-05	Pa·s
Prandtl number	7.01	-
Grashof number	1.56e+08	-
Nusselt number	1.02e+03	-
Heat transfer coefficient	1020	W/m <sup>2</sup> ·K
Heat flux	1020	W/m <sup>2</sup>
Temperature difference	2	K
Length	0.01	m
Area	0.0001	m <sup>2</sup>
Volume	0.001	m <sup>3</sup>
Mass	0.001	kg
Number of moles	0.001	mol
Specific heat capacity	1.005	J/kg·K
Thermal conductivity	0.026	W/m·K
Dynamic viscosity	1.81e-05	Pa·s
Prandtl number	7.01	-
Grashof number	1.56e+08	-
Nusselt number	1.02e+03	-
Heat transfer coefficient	1020	W/m <sup>2</sup> ·K
Heat flux	1020	W/m <sup>2</sup>
Temperature difference	2	K
Length	0.01	m

5 bookmark signals from a viewer.

## BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example and not limitation in the figures of the accompanying drawings, in which like references indicate similar elements, and in which:

5        **Figure 1** shows an embodiment of a method for bookmarking.

**Figure 2** is a block diagram of an on-site media system having a dedicated service module.

**Figure 3A** is a block diagram of data recorded on a dedicated service module.

10       **Figure 3B** is a diagram of multiple designs of a dedicated service module.

**Figure 4** is a block diagram of another configuration of a dedicated service module.

15       **Figure 5** is a functional block diagram of an interactive media system including content provider and viewer systems with functions.

**Figure 6A** is a diagram of a fine-grain media stream.

**Figure 6B** is a television view generated using the interactive media system.

## DETAILED DESCRIPTION

A method for real-time bookmarking of streaming media assets is disclosed. In one embodiment, the method includes dynamically changing the presentation order of a plurality of video segments based on one or more  
5 bookmark signals from a viewer.

An advantage of this method is that the viewer receives a full overview of the available segment material. It is not necessary for the viewer to revisit the teasers to access other segment content of interest. The viewer can easily and dynamically determine the presentation sequence for subsequent passive and  
10 customized viewing.

An apparatus, such as an interactive service module, can present television segments to a viewer on demand. The interactive service module can perform a method for real-time bookmarking of streaming media assets. The interactive service module may include a tuner to receive data for  
15 television segments, and a computer readable memory to store the segment data. Teasers associated with each segment may also be received by the tuner and stored in memory. Metadata may be used to identify each segment and its corresponding teaser. The metadata may also be received by the tuner and stored in memory. The metadata may be used to enable the viewer to control  
20 the presentation order of several segments that are displayed to the viewer. A



presentation engine of the interactive service module may present the content based on viewer preferences.

For example, digital Audio/Video (AV) content material, e.g. video clips representing a television news segment, may be available to the interactive service module from random access storage, either locally or through a network. For each story, represented by one or more video clips, an additional teaser video clip is available from storage. Alternatively, a table of contents (TOC) can be retrieved from storage. A teaser clip introduces a single story and gives an impression about the topic of the story. Descriptive metadata may be used by the interactive service module to identify separate stories in the video material and to identify their corresponding teasers.

A dynamic navigation mechanism to perform real-time bookmarking may be executed by the interactive service module. The mechanism enables a viewer to send a signal to the presentation engine during the presentation of a teaser indicating that the corresponding story is of interest. The presentation of the teasers continues until all teasers have been presented, but the subsequent presentation structure of the corresponding stories is changed according to the viewer's bookmark signals. This results in a customized presentation of the bookmarked stories.

A method for bookmarking is shown in **Figure 1**. For a plurality of segments, each segment is associated with a corresponding teaser, step 110.



presentation. In one embodiment, the method for bookmarking may also be used during a presentation of a story to indicate that the current story is of interest, but should be presented later or with reduced priority. Thus, this enables the viewer to postpone the presentation of the current story, and  
5 changes the presentation order dynamically.

In one embodiment, a method to bookmark or postpone a story is not limited to a television news segment environment. The method can be applied to situations where a streaming media presentation order is dynamically changed based on viewer input, such as a table of contents of a video library, a  
10 music video, or an audio-only application, for example.

**Figures 2** through **5** show embodiments of an interactive service module for real-time bookmarking of streaming media assets. Referring now to **Figure 2**, a block diagram of an on-site media system having a dedicated service module is shown, in accordance with one embodiment of the present  
15 invention. To provide a context for the dedicated service module, on-site media system 200 shows one embodiment of a larger system in which the dedicated service module may be implemented to provide a dedicated on-site media service. On-site media system 200 includes a control/data bus 202 for communicating information, a central processor unit 204 for processing  
20 information and instructions, coupled to bus 202, and a memory unit 206 for storing information and instructions, coupled to bus 202. Memory unit 206 can

include random access memory (RAM) 206a, for storing temporal information and instructions for central processor unit 204, and read only memory (ROM) 206b, for storing static information and instructions for central processor unit 204. System 200 also includes a display device 218 coupled to bus 202, for  
5 viewing data, and a signal source 212, coupled to dedicated service module 210 via line 213a for providing a signal.

On-site media system 200 also includes a dedicated service module 210, coupled to bus 202, to provide a media signal. Dedicated service module 210 can also be referred to as a dedicated media device or a dedicated service  
10 cartridge, depending on its specific configuration. Dedicated service module 210, enables the on-site media service to be implemented by providing dedicated tuning and guaranteed storage for a broadcast signal. The dedicated tuning provides a dedicated path from the broadcast stream into the guaranteed storage device. More specifically, dedicated service module 210  
15 includes one or more dedicated tuners and one or more dedicated media storage devices, coupled to each other. More details of dedicated service module 210 are provided in subsequent figures. Dedicated service module 210 can allow for proprietary encoding of service information in datacast associated with broadcast streams with built-in support in the dedicated  
20 service module for processing the service information. The dedicated service module can also support software reconfiguration via broadcast at several

different levels (e.g., device upgrade, software platform upgrade, and content upgrade).

Signal source 211 can be any device, such as an antennae for receiving a broadcast, a cable interface for line transmission, or a dish for receiving  
5 satellite broadcast. Display device 218 of **Figure 2** can be any type of display, including an analog or a digital television, or a personal computer (PC) display. While processor 204 and memory 206 are shown as individual entities, they may be incorporated into another component. For example, processor 204 and memory 206 may be new components or may be existing  
10 components in display device 218, e.g. a digital television (DTV), dedicated service module 210, or in a set-top box (not shown). Additionally, while dedicated service module 210 is shown individually, it may be integrated into other components, such as display device 218, as shown in configuration B of subsequent **Figure 3B**.

15 System 200 also includes an optional Internet connection 216 coupled to bus 202 for transmitting information to, and receiving information from, the Internet. The information may be a video segment, such as an A/V clip for example. An optional user input device 212, e.g. a keypad, remote control, etc., coupled to bus 202 is also included in system 200 of **Figure 2**, to provide  
20 communication between system 200 and a user. Optional local receiver/source 208, which can be a set top box in one embodiment, is coupled

to bus 202 to provide a media signal. Optional local receiver/source 208 can alternatively be located inside display device 218. Optional local/receiver source 208 can allow viewer options such as simultaneous viewing of a segment through a tuner or source that is independent of the dedicated tuners  
5 of dedicated service module 210. Thus, the dedicated tuner, e.g. 201, in dedicated service module 210, always provides a dedicated path for a given medial signal.

Bus 202 provides an exemplary coupling configuration of devices in on-site media system 200. Bus 202 is shown as a single bus line for clarity. It is  
10 appreciated by those skilled in the art that bus 202 can include subcomponents of specific data lines and/or control lines for the communication of commands and data between appropriate devices. It is further appreciated by those skilled in the art that bus 202 can be a parallel configuration, or a IEEE 1394 configuration, that bus 202 can include numerous gateways, interconnect, and  
15 translators, as appropriate for a given application.

It is also appreciated that on-site media system 200 is exemplary only and that the present invention can operate within a number of different media systems including a commercial media system, a general purpose computer system, etc. Furthermore, the present invention is well-suited to using a host  
20 of intelligent devices that have similar components as exemplary on-site media system 200.

Referring now to **Figure 3A**, a block diagram of a dedicated service module is shown, in accordance with one embodiment of the present invention. Dedicated service module 210, also referred to as a dedicated media device, or a dedicated service cartridge depending upon the configuration, includes a media storage adapter 306, a tuner adapter 308, and interfaces 304a and 304b for tuner adapter 308 and for media storage adapter 306, respectively. Media storage adapter 306 includes appropriate mechanical and electrical components to accommodate a dedicated media storage device. Similarly, tuner adapter 308 includes appropriate mechanical and electrical components to accommodate a dedicated tuner. Media storage adapter 306 is coupled to tuner adapter 308 via one or more dedicated tuners, e.g. tuner 210a, and one or more dedicated disks, e.g. 203a, respectively coupled together in exclusive pairs, in the present embodiment.

Interface 304a, in turn includes a multiplexed broadcast stream 213a coupled to tuner adapter 308. Interface 304b includes a two-way display device control line 316, which can be coupled to media storage adapter 306 via bus 315. In one embodiment, bus 315 can be coupled to bus 202 of **Figure 2**. Interface 304b also includes an optional Internet 304b also includes an optional Internet connection 213b that may be directly coupled to one or more dedicated cartridges, e.g. open slot 313, in one embodiment. In another embodiment, only a dedicated storage device is coupled to optional Internet

connection 213b because the Internet connection bypasses the need for a dedicated tuner.

The present embodiment of dedicated service module 210 includes multiple tuners and disks, exclusively coupled to each other as shown.

5 However, the present invention is well-suited to many different configurations. For example, one or more allocated partitions, or portions, of a single disk can be utilized in lieu of separate storage devices, e.g. one hard drive with five partitions replaces five separate hard drives. In yet another embodiment, a "gang" of multiple tuners could be cooperatively shared across  
10 a current active receiver, under the assumption that not all of the multiple broadcast signals would want to be tuned and recorded at all times. In this latter embodiment, each broadcast signal can still have a guaranteed capacity of disk storage. This latter embodiment would trade off the cost of a service module with the level of dedicated service desired.

15 While the present embodiment arranges multiple tuner-storage pairs, e.g. 203a and 201a pair and 203b and 201b pair, in a parallel manner, the present invention is well-suited to alternative coupling arrangements. For example, in one embodiment, tuner-storage pairs may be daisy-chained to deliver the multiplex broadcast signal to each dedicated tune.

20 Bus 315, for providing multiplexed broadcast stream, is conformal to the Institute of Electrical and Electronic Engineers (IEEE) 1394 standard in one



embodiment. Furthermore, two-way media/data line 316 is also compatible with the IEEE 1394 standard, in one embodiment.

The connection to the optional local receiver, e.g. optional local receiver/source 208 of **Figure 2** (viz., a tuner in a television or Set Top Box (STB)), enables a viewer to access segmenting from dedicated service module 210 as a set of streams to complement a conventional broadcast from optional local receiver. Furthermore, the present invention is well-suited to using many different configurations of dedicated tuner-storage devices. For example, one or more dedicated media storage devices may be committed to a single dedicated tuner, thus allowing concurrent recording and viewing. Alternative embodiments are provided in subsequent figures.

The present invention also shows one open slot 312 for an additional dedicated tuner-storage pair. However, the present invention is well-suited to providing interactive media device 210 with any number of open slots and any number of installed dedicated tuner-storage pairs.

Additionally, dedicated storage device 210 has a modular interface to media storage adapter 306 and tuner adapter 308 in the present embodiment. That is, the present embodiment of **Figure 3A** is a form-factor media tower into which a consumer can plug or unplug dedicated service cartridges, having the dedicated tuners and media storage devices, units.

Referring now to **Figure 3B**, multiple designs of a dedicated service module are shown, in accordance with one embodiment of the present invention. Configurations A-C show alternative configurations for a modular embodiment of the dedicated service module, e.g. where the dedicated tuner-disk, pairs are removable cartridges. Configuration A shows a traditional stand alone dedicated service module device. Configurations B shows an integrated dedicated service module that is built-in to a display device. Lastly, configuration C shows a stacked stand alone dedicated service module device. The dedicated tuner-storage pairs can be plugged into a back-plane of any device appropriate for consumer use. The present invention is well-suited to using any other stacking and coupling configuration for a modular dedicated service module. It is appreciated that the integrated service module devices shown in **Figure 3B** are exemplary. The present invention is well-suited to a wide range of designs and configurations for the dedicated service module and the cartridge embodiment of the dedicated tuner-disk pair.

Referring now to **Figure 4**, a block diagram of another configuration of a dedicated service module is shown, in accordance with one embodiment of the present invention. Dedicated service module 310a, also referred to as a dedicated service cartridge, includes a media storage device 402, and a tune 404. In the present embodiment, both the media storage device 402 and the tuner 404 to which it is coupled, are dedicated to a specific content provider.

For example, tuner 404 may be preset to receive a broadcast frequency corresponding to a national news broadcaster. In another embodiment, dedicated service module 310a can be generic cartridge that is segmented with tuning instructions suitable to tune in the appropriate broadcast signal, in response to a subscription, or to some other business module.

Tuner 404 of **Figure 4** is coupled to adapter 406 via data line 408 to receive source signal, e.g. a broadcast spectrum. Media storage device 402 and tuner 404 are coupled via control line 410 to adapter 406 to receive instructions to tuner and/or media storage device in accordance with on-site media service software and commands, e.g. via processor 204 and memory 206 of **Figure 2**. Media storage device 402 is also coupled to adapter 406 via line 416 to provide media data from media storage device to a media system, such as that shown in **Figure 2**. Line 414 provides the dedicated media signal, tuner by tuner 404, to dedicated media storage 402. In another embodiment, data and control can be multiplexed on a single line. Adapter 406 allows dedicated service module 310a to interface with an interactive media system, such as the embodiment shown in **Figure 3A**. As mentioned in **Figure 3A**, another embodiment of a dedicated service module allows for dedicated Internet access, and thus eliminates the dedicated tuner but retains the dedicated media storage device.

In one embodiment, dedicated service module 310a of **Figure 4** is a modular unit that a consumer can purchase and simply insert to an interactive

media system. Media storage device 402 is shown as a single device in **Figure**

4. However, the present invention is well-suited to using many different configurations and embodiment. In another embodiment, multiple

independent read/write access mechanisms can be adapted to a single

5 recording disk for simultaneous read/write aspects. In the present

embodiment, media storage device 402 is a hard drive unit, similar to those

used in PCs. However, the present invention is well-suited to using any media

recording device, as is appropriate for a given application. Additionally, the

tuners and disks of the dedicated service module are capable of recording and

10 delivering a fixed number of streams, e.g. for input and output, as appropriate for the service.

While **Figure 4** provides dedicated tuner-storage device 310a as a removable modular embodiment, it can also be configured as a fixed internal device for incorporation into a display device, such as digital television.

15 Additionally, tuner 404 can be implemented as a digital or an analog device.

While **Figure 4** shows a single media storage device allocated to a single dedicated tuner, the present invention is well-suited to different

configurations. For example, in lieu of dedicated an entire media storage

device to a single dedicated tuner, one embodiment of the present invention

20 dedicates one or more partitions of a common media storage device to a single

dedicated tuner. In this manner, the single common storage device can be

shared among multiple tuners while still satiating the goal of guaranteed storage capacity for a broadcast signal.

Referring now to **Figure 5**, a functional block diagram of an interactive media system including content provider media system and on-site media system is shown, in accordance with one embodiment of the present invention. Interactive media system 500 includes a content provider media system 520, also referred to as content provider, and includes an on-site media system 530.

Content provider media system 520 includes a media content database 504 that provides media content data, as indicated by the arrows, to an editing block 506 and to an encoder engine block 512. Any format of data can be stored in the media content database 504. For example, in one embodiment, the media content data stored in media content database 504 is compliant with the Moving Picture Experts Group-2 (MPEG-2) standard. Media content database 504 also communicates, as shown by arrow, with on-site media service database 502, which in turn provides data to editing block 506. On-site media service database 502 includes metadata, content options, service data and service options, function data and functional options, and interactive data and interactive options, in one embodiment. However, the present invention is well-suited to storing any other type of data that would enhance the on-site media service. These data may be commands, software code, descriptive structures, or other information useful to an on-site media system.





automatically cache a specific Web content prior to viewer presentation in order to give the viewer a sense of instant access during the presentation. Additionally, a back channel can be enabled either via this Internet block or through other mechanisms, such as a cable modem for cable-based broadcast.

5           Decoder 532 can be a dedicated tuner, such as the dedicated tuner 404 shown in **Figure 4**, or the dedicated tuner portion, e.g. tuner 201a of **Figure 3A**. Content manager block 536 provides a filtering function on the decoded media signal. That is, content manager block 536 segregates content from on-site media service data and sends them to respective storage devices, e.g. media  
10   content hard drive 538 for content data, and on-site media service drive 540. These separate drives are figurative in one embodiment as both signals can be tied together by writing them to a single disk. Content manager block 530 can also implement a first-level content filter that, according to subscription software, user profile, or viewer-selected options, decides whether to record  
15   the media signal, e.g. to media content hard drive 538, or to ignore the signal and not record it. Content manager can be implemented using instructions stored on memory 206 and implemented on processor 204 of on-site media hardware system 200, as shown in **Figure 2**, in one embodiment.

          The next stage of on-site media system 530 is the data presentation  
20   formatting stage 556. In this stage, on-site media service information is received from on-site media service drive 540 at showflow engine block 544.



Showflow engine block 544 formats and implements on-site media service data for subsequent integration with content data. Then showflow engine block 544 provides the processed data to rendering engine 542. Similarly, content data is received from dedicated media content hard drive 538 at rendering engine 542.

- 5 Rendering engine 542 performs the formatting and integration of the desired images to be viewed on display device, in one embodiment. A wide variety of media elements, e.g. video, audio, text, etc., may be combined in many different formats to provide a desired composite presentation for viewing on display device 546. For example, electronic segmenting guide (EPG)
- 10 information may be more dynamically formatted, including clips from the actual segment. That is, the EPG can be enabled via the present invention to allow users to view previews of any segment for which a commercial has been broadcast instead of the typical text tile of a segment in a two-dimensional grid. In another embodiment, a user segment interface that presents menus,
- 15 media clips, or other data, may be overlaid onto content images for display device 546.

- Rendering engine 542 transfers presentation data to display device 546 for the final stage of presenting display 558. User input is communicated back to rendering engine 542 via line 548. User input can be received via push-
- 20 button selection on set-top box or a television unit, or from an other source, such as a remote control input.

While the present embodiment only shows a single decoder 532 and a single dedicated hard drive, e.g. disk set 538 and 540, dedicated for a single media signal, e.g. signal 522, the present invention is capable of functional blocks for multiple units in parallel, in one embodiment. In another

5   embodiment, memory and processor resources (e.g. memory 206 and processor 204 of **Figure 2**) are utilized to accomplish engine functions (e.g. rendering engine 542, content manager function 536, and showflow engine 544, as well as other engines not shown). It is appreciated that the engine functions performed on memory and processor are accomplished in a serial manner if

10   only a single processor is implemented. In another embodiment, multiple processors can be utilized to accomplish dedicated functions in on-site media system 530, in a parallel or serial fashion.

Referring now to **Figure 6A**, a diagram of a fine-grain media stream 600 is shown, in accordance with one embodiment of the present invention. **Figure**

15   **6A** illustrates segment data and duration as a physical block 601. Segment block 601 has a time span 606 over which content is presented. The present invention provides a very fine grain metadata tagging for segment content. For example, **Figure 6A** shows metadata labeling at a clip level, e.g. metadata tag 603a for clip content 602a having a time span of 604. This is repeated for

20   any quantity of clips within the segment. The present invention is well-suited to using any scale of metadata labeling, as appropriate for an application. For

example, tagging clips with metadata would be appropriate for some news segments having many short clips in the segment. By using the fine-grain metadata tagging, the present invention provides the necessary data and infrastructure for an on-site media service to provide enhanced services and functions to a viewer. One such feature would be fine-grain navigation and compilation of media content related to a specific viewer interest or inquiry.

Referring to now to **Figure 6B**, a television view generated using the interactive media system is shown, in accordance with one embodiment of the present invention. Television view 650 is shown on a conventional television 658. Segment user interface 654 is provided along with a presenter 656 image, both of which are overlaid onto a core media content 652, e.g., an airplane story clip. The present invention provides the appropriate audio and associated data corresponding to the video data. Notably, the content-provider can exercise editorial content over when and what service, function, and content options are available to the viewer, e.g. through the segment user interface. This allows greater choice to a viewer while still satisfying a business model for the content provider.

Television view 650 illustrates how the content provider, e.g. broadcaster, can control some of the recording, management formatting, and presentation of media to a user. Similarly, television view 650 illustrates how the viewer can interact with predetermined menu options to accomplish

desired services and features, e.g. viewing segment user interface for  
alternative clips, selecting a function from a menu in segment user interface  
654, or adjusting the presenter format 656. The present invention is well-suited  
to using any combination of these, and other, presentation formats and

5 contents to present an on-site media service to the viewer, and or user.

Furthermore, each of the several on-site media services described can be  
implemented independent of each other, or in any combination. The same  
independence exists for the interactive feature of the on-site media service.

The method can be implemented in an environment with software  
10 controlled access to streamed media, where descriptive Metadata is used to  
relate teaser AV material to full length versions of the corresponding content.

These and other embodiments of the present invention may be realized  
in accordance with these teachings and it should be evident that various  
modifications and changes may be made in these teachings without departing  
15 from the broader spirit and scope of the invention. The specification and  
drawings are, accordingly, to be regarded in an illustrative rather than  
restrictive sense and the invention measured only in terms of the claims.

## CLAIMS

What is claimed is:

- 1 1. A method comprising:
  - 2 dynamically changing a presentation order of a plurality of segments
  - 3 based on one or more bookmark signals from a viewer.
- 1 2. The method of claim 1, further comprising, for each segment, associating
  - 2 each segment with a corresponding teaser.
- 1 3. The method of claim 2, further comprising sequentially presenting each
  - 2 of the teasers to the viewer.
- 1 4. The method of claim 3, further comprising
  - 2 during the presentation of a given teaser, enabling the viewer to send a
  - 3 bookmark signal indicating that the corresponding segment is of interest.
- 1 5. The method of claim 4, further comprising bookmarking the
  - 2 corresponding segment as of interest to the viewer if the viewer sends a
  - 3 bookmark signal.

1     7.     The method of claim 6, wherein the presentation order is dynamically  
2     changed so that the bookmarked segments are displayed before the segments  
3     that are not bookmarked.

1 8. The method of claim 7 further comprising during the presentation a  
2 given teaser, enabling the viewer to send a signal from the group comprising:  
3 a negative signal to indicate that the viewer is not interested in the  
4 segment, and a neutral signal to indicate that the viewer is neutral about the  
5 segment.

1        9.        The method of claim 1 further comprising  
2                displaying a table of contents having a plurality of entries to the viewer,  
3        wherein each entry in the table of contents corresponds to one of the video  
4        segments;  
5                enabling the viewer to modify the order of the entries of the table of  
6        contents; and  
7                displaying the video segments in the modified order of the  
8        corresponding entries in the table of contents.

1 11. The medium of claim 10, wherein the executed instructions further cause  
2 the system to, for each segment, associate each segment with a corresponding  
3 teaser.

1    12.    The medium of claim 11, wherein the executed instructions further cause  
2    the system to sequentially present each of the teasers to the viewer.

1     13.     The medium of claim 12, wherein the executed instructions further cause  
2     the system to enable the viewer, during the presentation of a given teaser, to  
3     send a bookmark signal indicating that the corresponding segment is of  
4     interest.

1     14.     The medium of claim 13, wherein the executed instructions further cause  
2     the system to bookmark the corresponding segment as of interest to the viewer  
3     if the viewer sends a bookmark signal.





1 19. An apparatus comprising:

2 means for dynamically changing a presentation order of a plurality of  
3 segments based on one or more bookmark signals from a viewer; and  
4 means for associating each segment with a corresponding teaser.

1    20.    The apparatus of claim 19, further comprising means for sequentially  
2    presenting each of the teasers to the viewer.

1     21.     The apparatus of claim 20, further comprising  
2             means for enabling the viewer, during the presentation of a given teaser,  
3     to send a bookmark signal indicating that the corresponding segment is of  
4     interest.

1     22.     The apparatus of claim 21, further comprising means for bookmarking  
2     the corresponding segment as of interest to the viewer if the viewer sends a  
3     bookmark signal.





[illegible]

5

```
graph TD; 110[FOR A PLURALITY OF SEGMENTS, ASSOCIATE EACH SEGMENT WITH A CORRESPONDING TEASER] --> 120[PRESENT TEASER TO A VIEWER]; 120 --> 130[DURING THE PRESENTATION OF A GIVEN TEASER, ENABLE THE VIEWER TO SEND A BOOKMARK SIGNAL INDICATING THAT THE CORRESPONDING PROGRAM IS OF INTEREST]; 130 --> 140[IF THE VIEWER SENDS A BOOKMARK SIGNAL, BOOKMARK THE CORRESPONDING PROGRAM AS OF INTEREST TO THE VIEWER]; 140 --> 150{HAVE ALL TEASERS BEEN PRESENTED?}; 150 -- YES --> 160[CHANGE THE PRESENTATION ORDER OF THE PROGRAMS BASED ON THE BOOKMARK SIGNALS]; 150 -- NO --> 120; 160 --> 170[PRESENT THE PROGRAMS TO THE VIEWER ON THE DYNAMICALLY CHANGED PRESENTATION ORDER];
```

110 FOR A PLURALITY OF SEGMENTS, ASSOCIATE EACH SEGMENT WITH A CORRESPONDING TEASER

120 PRESENT TEASER TO A VIEWER

130 DURING THE PRESENTATION OF A GIVEN TEASER, ENABLE THE VIEWER TO SEND A BOOKMARK SIGNAL INDICATING THAT THE CORRESPONDING PROGRAM IS OF INTEREST

140 IF THE VIEWER SENDS A BOOKMARK SIGNAL, BOOKMARK THE CORRESPONDING PROGRAM AS OF INTEREST TO THE VIEWER

150 HAVE ALL TEASERS BEEN PRESENTED?

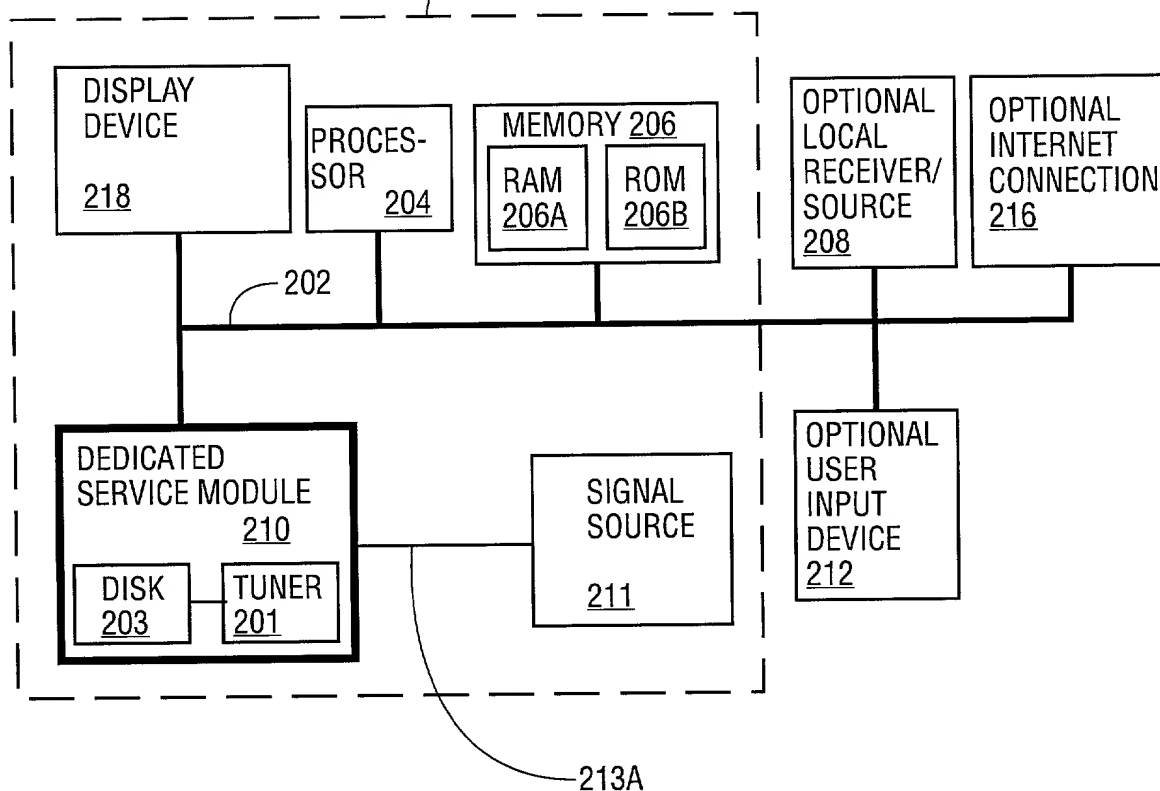
YES

160 CHANGE THE PRESENTATION ORDER OF THE PROGRAMS BASED ON THE BOOKMARK SIGNALS

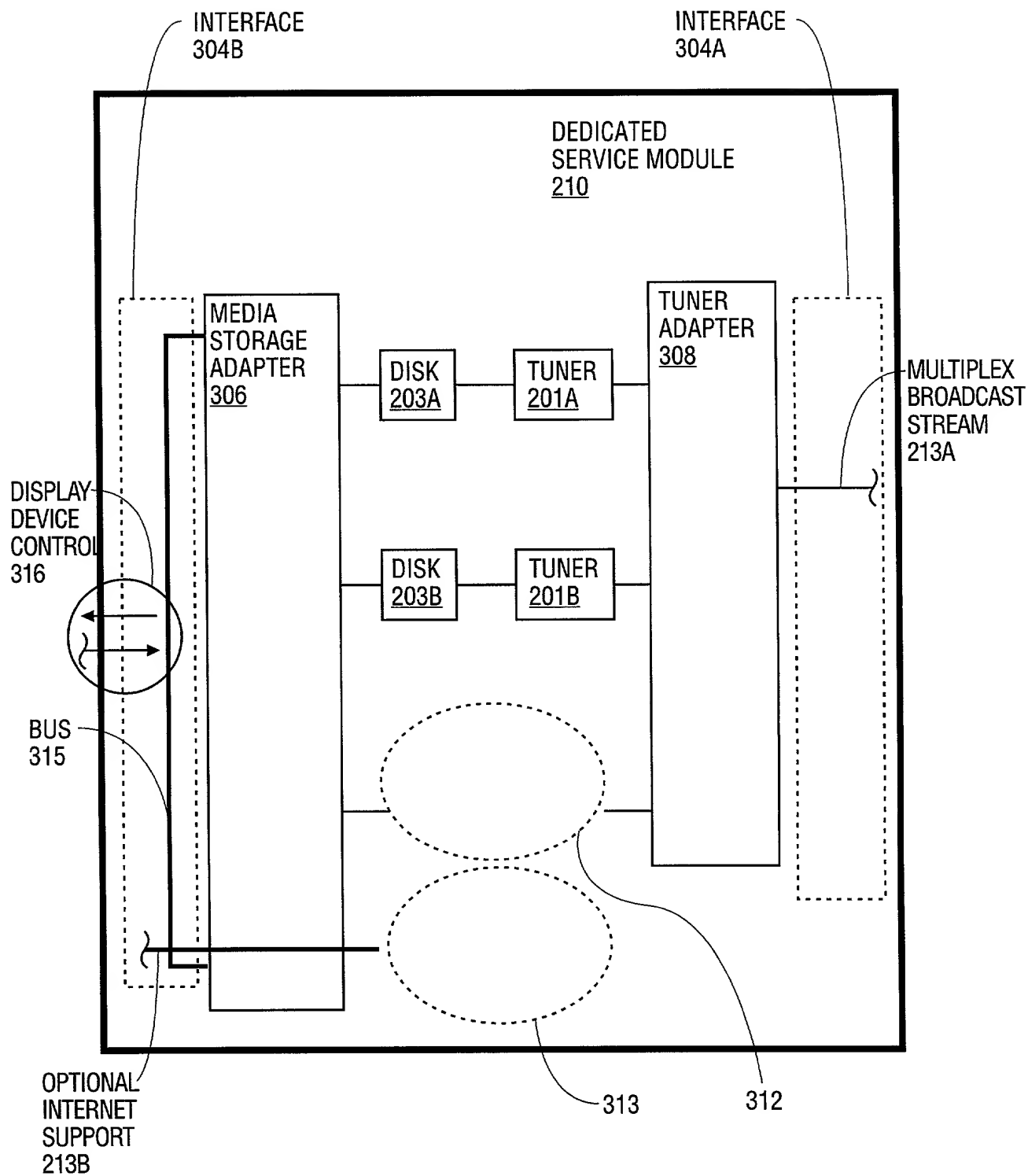
170 PRESENT THE PROGRAMS TO THE VIEWER ON THE DYNAMICALLY CHANGED PRESENTATION ORDER

NO

**FIG. 1**

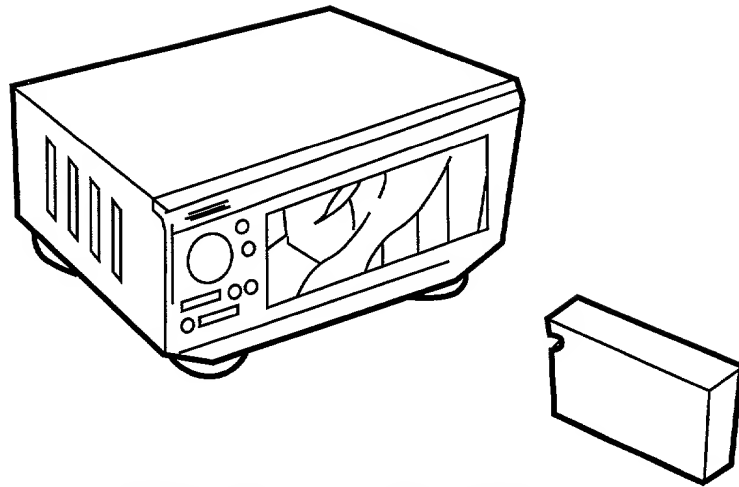


**FIG. 2**

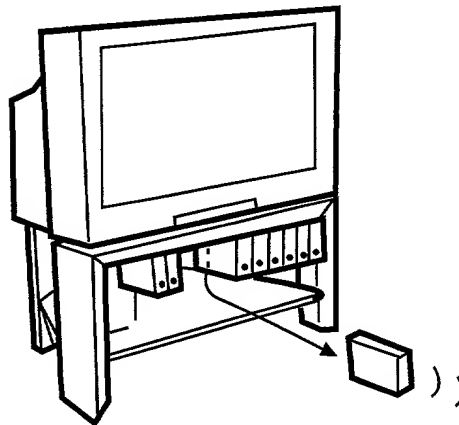


**FIG. 3A**

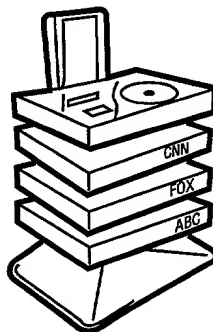
•



### CONFIGURATION A: TRADITIONAL



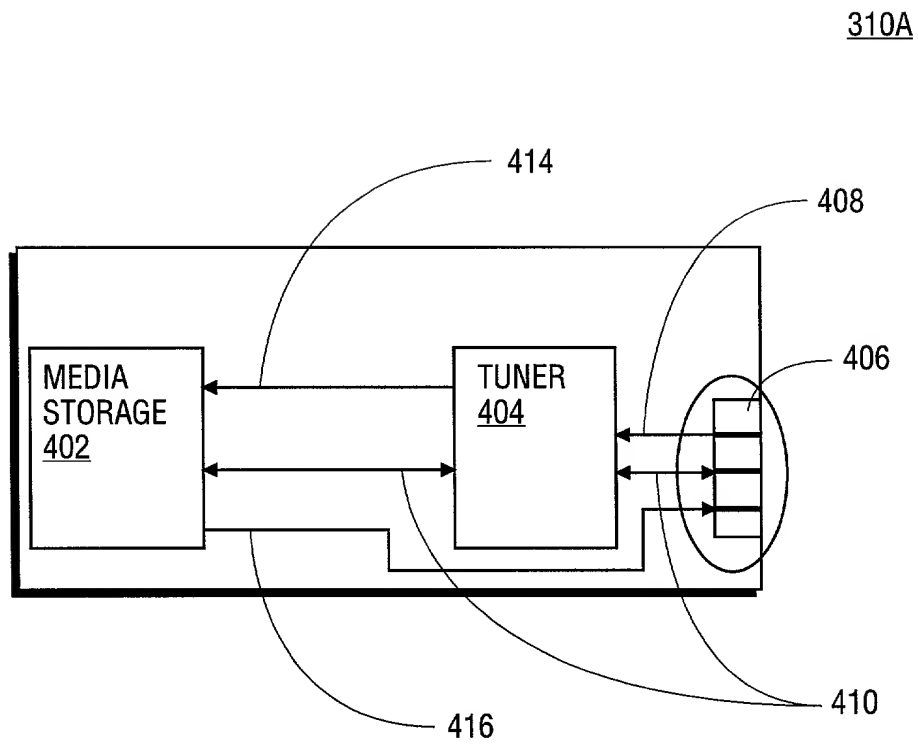
### CONFIGURATION B: INTEGRATED



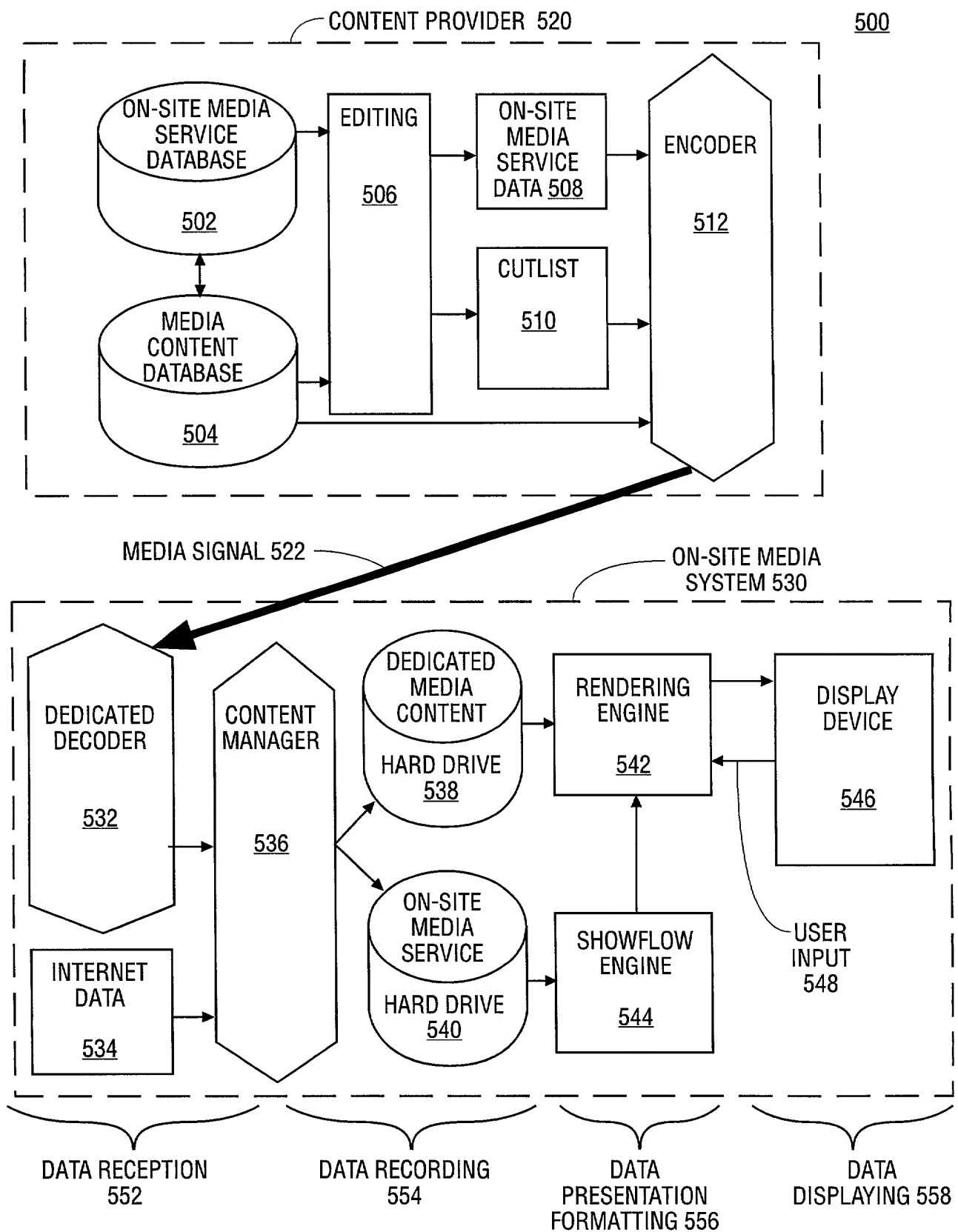
### CONFIGURATION C: STACKED

**FIG. 3B**



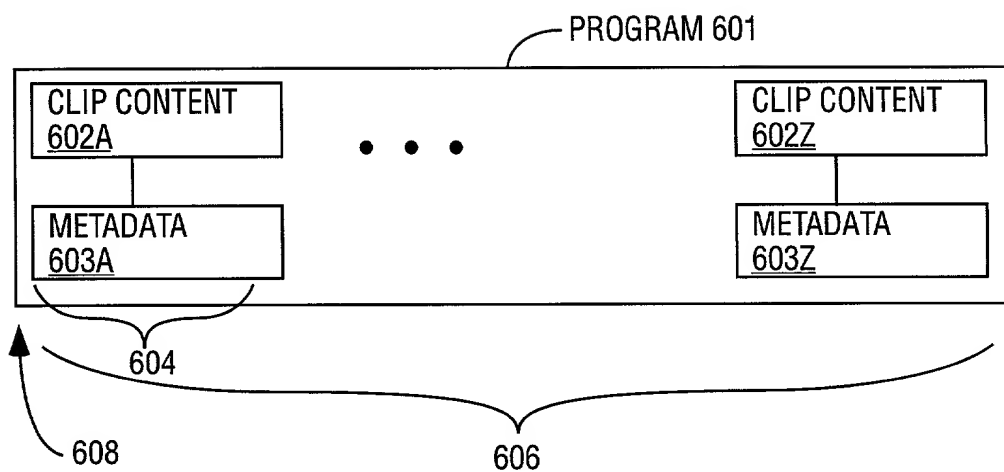


**FIG. 4**

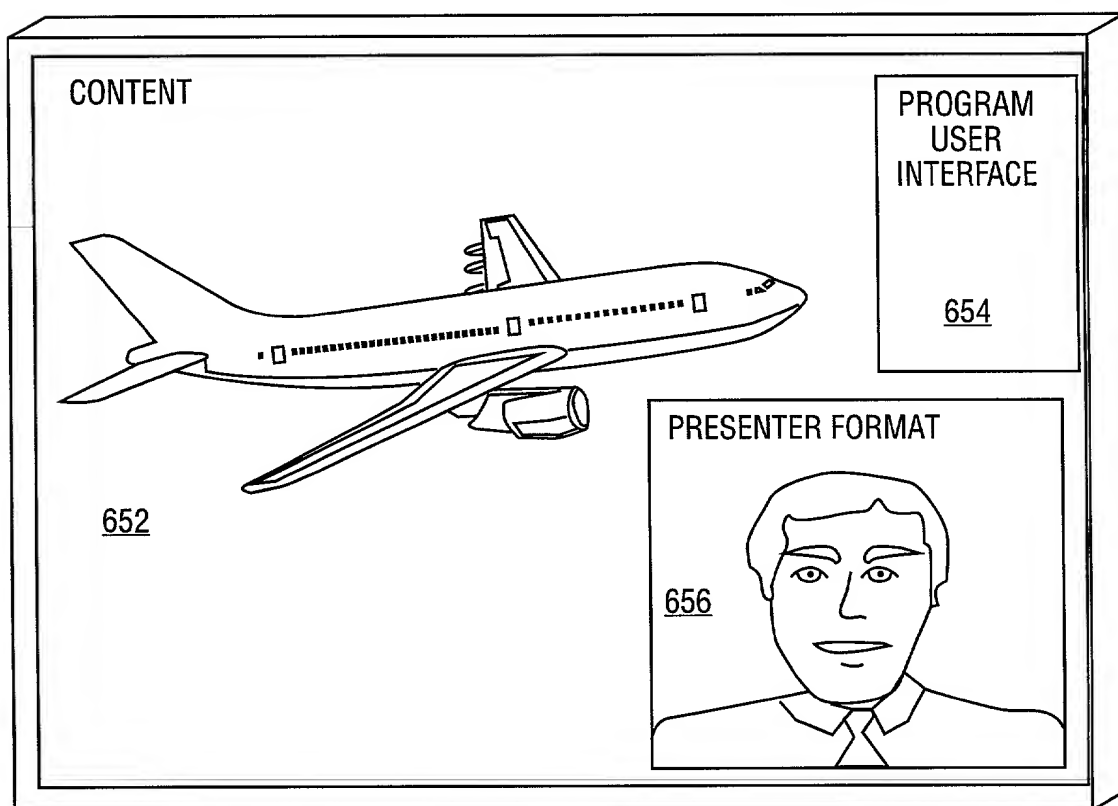


**FIG. 5**

600



**FIG. 6A**



**FIG. 6B**

As a below named inventor, I hereby declare that:

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

the specification of which

X is attached hereto.  
\_\_\_\_\_ was filed on \_\_\_\_\_ as  
United States Application Number \_\_\_\_\_  
or PCT International Application Number \_\_\_\_\_  
and was amended on \_\_\_\_\_  
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>			<u>Priority Claimed</u>	
<u>(Number)</u>	<u>(Country)</u>	<u>(Day/Month/Year Filed)</u>	<u>Yes</u>	<u>No</u>
<u>(Number)</u>	<u>(Country)</u>	<u>(Day/Month/Year Filed)</u>	<u>Yes</u>	<u>No</u>
<u>(Number)</u>	<u>(Country)</u>	<u>(Day/Month/Year Filed)</u>	<u>Yes</u>	<u>No</u>
<u>(Number)</u>	<u>(Country)</u>	<u>(Day/Month/Year Filed)</u>	<u>Yes</u>	<u>No</u>

I hereby claim the benefit under title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

_____	_____
(Application Number)	Filing Date
_____	_____
(Application Number)	Filing Date

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

_____	_____	_____
(Application Number)	Filing Date	(Status -- patented, pending, abandoned)
_____	_____	_____
(Application Number)	Filing Date	(Status -- patented, pending, abandoned)

I hereby appoint the persons listed on Appendix A hereto (which is incorporated by reference and a part of this document) as my respective patent attorneys and patent agents, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to Jeffrey S. Smith, BLAKELY, SOKOLOFF, TAYLOR &  
(Name of Attorney or Agent)  
ZAFMAN LLP, 12400 Wilshire Boulevard 7th Floor, Los Angeles, California 90025 and direct  
telephone calls to Jeffrey S. Smith, (408) 720-8598.  
(Name of Attorney or Agent)

[illegible]

Inventor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Post Office Address 470 Oak Grove Drive #305  
Santa Clara, California 95054

Inventor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Post Office Address 1394 Jackson Street  
Santa Clara, California 95050

## APPENDIX A

William E. Alford, Reg. No. 37,764; Farzad E. Amini, Reg. No. P42,261; Aloysius T. C. AuYeung, Reg. No. 35,432; William Thomas Babbitt, Reg. No. 39,591; Carol F. Barry, Reg. No. 41,600; Jordan Michael Becker, Reg. No. 39,602; Bradley J. Bereznak, Reg. No. 33,474; Michael A. Bernadicou, Reg. No. 35,934; Roger W. Blakely, Jr., Reg. No. 25,831; Gregory D. Caldwell, Reg. No. 39,926; Ronald C. Card, Reg. No. 44,587; Andrew C. Chen, Reg. No. 43,544; Thomas M. Coester, Reg. No. 39,637; Alin Corie, Reg. No. P46,244; Dennis M. deGuzman, Reg. No. 41,702; Stephen M. De Klerk, under 37 C.F.R. § 10.9(b); Michael Anthony DeSanctis, Reg. No. 39,957; Daniel M. De Vos, Reg. No. 37,813; Robert Andrew Diehl, Reg. No. 40,992; Sanjeet Dutta, Reg. No. P46,145; Matthew C. Fagan, Reg. No. 37,542; Tarek N. Fahmi, Reg. No. 41,402; Paramita Ghosh, Reg. No. 42,806; James Y. Go, Reg. No. 40,621; James A. Henry, Reg. No. 41,064; Willmore F. Holbrow III, Reg. No. P41,845; Sheryl Sue Holloway, Reg. No. 37,850; George W. Hoover II, Reg. No. 32,992; Eric S. Hyman, Reg. No. 30,139; William W. Kidd, Reg. No. 31,772; Sang Hui Kim, Reg. No. 40,450; Eric T. King, Reg. No. 44,188; Erica W. Kuo, Reg. No. 42,775; Kurt P. Leyendecker, Reg. No. 42,799; Michael J. Mallie, Reg. No. 36,591; Andre L. Marais, under 37 C.F.R. § 10.9(b); Paul A. Mendonsa, Reg. No. 42,879; Darren J. Milliken, Reg. No. 42,004; Lisa A. Norris, Reg. No. 44,976; Chun M. Ng, Reg. No. 36,878; Thien T. Nguyen, Reg. No. 43,835; Thinh V. Nguyen, Reg. No. 42,034; Dennis A. Nicholls, Reg. No. 42,036; Daniel E. Ovanezian, Reg. No. 41,236; Marina Portnova, Reg. No. P45,750; Babak Redjaian, Reg. No. 42,096; William F. Ryann, Reg. No. 44,313; James H. Salter, Reg. No. 35,668; William W. Schaal, Reg. No. 39,018; James C. Scheller, Reg. No. 31,195; Jeffrey Sam Smith, Reg. No. 39,377; Maria McCormack Sobrino, Reg. No. 31,639; Stanley W. Sokoloff, Reg. No. 25,128; Judith A. Szepesi, Reg. No. 39,393; Vincent P. Tassinari, Reg. No. 42,179; Edwin H. Taylor, Reg. No. 25,129; John F. Travis, Reg. No. 43,203; George G. C. Tseng, Reg. No. 41,355; Joseph A. Twarowski, Reg. No. 42,191; Lester J. Vincent, Reg. No. 31,460; Glenn E. Von Tersch, Reg. No. 41,364; John Patrick Ward, Reg. No. 40,216; Mark L. Watson, Reg. No. P46,322; Thomas C. Webster, Reg. No. P46,154; Charles T. J. Weigell, Reg. No. 43,398; Kirk D. Williams, Reg. No. 42,229; James M. Wu, Reg. No. 45,241; Steven D. Yates, Reg. No. 42,242; and Norman Zafman, Reg. No. 26,250; my patent attorneys, and Justin M. Dillon, Reg. No. 42,486; my patent agent, of BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP, with offices located at 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025, telephone (310) 207-3800, and James R. Thein, Reg. No. 31,710, my patent attorney.

## APPENDIX B

### Title 37, Code of Federal Regulations, Section 1.56 Duty to Disclose Information Material to Patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclosure information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) Prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
  - (i) Opposing an argument of unpatentability relied on by the Office, or
  - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) Each inventor named in the application;
- (2) Each attorney or agent who prepares or prosecutes the application; and
- (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.